

Helping Schoolchildren with Asthma Breathe Easier: Partnerships in Community-based Environmental Health Education

Marie S. O'Neill

Indoor Environments Division, U.S. Environmental Protection Agency, Washington, DC 20460 USA

Hospitalizations and deaths attributed to asthma are increasing, and the disease has disproportionate impacts on children and minority populations, particularly African-Americans. Because asthma hospitalizations and deaths are viewed by many experts as preventable events, and because asthma's toll is so significant in economic terms, increased efforts to reverse these trends, particularly among the most affected groups, are warranted. Reducing exposures to airborne pollutants known to trigger asthma in both indoor and outdoor environments is one important preventive strategy. The public-private partnership effort to implement the Open Airways for Schools asthma management curriculum in urban elementary schools, with its emphasis on pollution prevention, is an example of a community-based effort that may help decrease the toll asthma takes on society. *Key words:* air pollution, asthma, children, community-based education, environmental justice, public-private partnerships. *Environ Health Perspect* 104:464-466 (1996)

More than 10 million Americans have been diagnosed with asthma, a chronic disease characterized by lung inflammation and episodes of narrowing of the bronchial passages, which makes breathing difficult (1). Recent data from the National Center for Health Statistics indicate that asthma kills about 5,000 people per year (2) and its cost was estimated at \$6.2 billion in medical care and lost time from school and work in 1990 (3). The struggle to breathe hits children particularly hard; asthma is the leading serious chronic illness of children in the United States and the leading cause of school absenteeism due to serious chronic illness (4).

The importance of asthma to the United States is reflected in the nation's Healthy People 2000 goals, which include "reducing asthma morbidity, as measured by a reduction in asthma hospitalizations to no more than 160 per 100,000 people, and reducing to no more than 10% the proportion of people with asthma who experience activity limitation" (5). Peter Gergen of the U.S. Public Health Service says, "Unfortunately, asthma deaths and hospitalizations are increasing, and poor and minority communities suffer a disproportionate share of both [see National Health Interview Study (6)]. This is cause for concern as well as concerted action to reduce the trend." The success of efforts to reduce the alarming toll asthma takes on the economy and the population's health may depend on the efforts of volunteers and increased cooperation between the public and private sectors.

Community Mobilization

Seven children from a public school in Washington, DC, spend a Saturday morning in a downtown seminar center, proudly

demonstrating their asthma management skills to a group of adults. As a closing skit, one girl feigns the symptoms of a serious asthma episode and the other children, with a little coaching from the American Lung Association's Director of Asthma and Lung Disease, Alice McIntosh, help her take the steps she needs to get help. After some final words from McIntosh, the adults move on to the next seminar room where Alvin Thomas of Howard University Hospital is giving a lecture on the causes, characteristics, and treatment of asthma. The adults, who are volunteering their time to find out how they and their communities can help children manage asthma, will have two more learning seminars to attend before the working lunch and the closing session devoted to questions and answers and networking with other participants.

This November 1994 asthma workshop was the kickoff event for a national campaign to promote the Open Airways for Schools asthma education curriculum for elementary schools, which was developed by Columbia University's College of Physicians and Surgeons. After promising results from a 1991 test of the curriculum, the Columbia researchers invited the American Lung Association, Inc. (ALA) to implement the program nationwide. ALA adopted the goal of establishing the program in every elementary school in the United States and is now leading the workshop campaign, with the cooperation of Fisons Pharmaceuticals, Inc., the U.S. Environmental Protection Agency, the National Heart, Lung and Blood Institute (NHLBI), and Zeta Phi Beta Sorority, Inc.

Twenty-two additional volunteer training workshops will be held in cities across

the United States in 1995 and 1996. The goal in each of the cities is to establish the open airways program in 50 schools, creating a "fabulous 50" that will multiply each year as each of the 50 volunteers recruit other participants. By the end of 1996, this campaign should involve 1100 schools, in addition to the 1600 currently participating. "This partnership is mobilizing communities to fight against asthma and fight for a healthy environment," says Judi Golding, former manager of ALA's Children's Lung Disease Programs. "The work we are doing is a critical step toward permanently establishing the Open Airways for Schools program in all American elementary schools."

The workshops provide the volunteer trainees with a basic understanding of the nature of asthma, methods of preventing and treating it, and the structure and philosophy of the open airways curriculum. The workshops also help volunteers make the personal connections and gain the skills they need to work effectively with local school authorities to make asthma education a fixture in the elementary classroom. In addition to the centerpiece Open Airways for Schools curriculum, which is targeted for 8- to 11-year-old children with asthma, workshop attendees receive the NHLBI asthma curriculum, which is designed for use by teachers in the general classroom, and EPA literature on air pollution (7).

The Environmental Justice Link

Many of the volunteer trainees are members of Zeta Phi Beta Sorority, Inc., an organization of 70,000 professional African-American women. The "Zetas" are committed to addressing the devastating and disproportionate effects that asthma has on the African-American community. "This disease is having a critical impact," says Jylla Moore Foster, international president of Zeta Phi Beta. "I don't believe that asthma has received enough publicity or been treated with the seriousness it deserves." Two to three times more African-Americans than whites die from asthma.

Address correspondence to M. S. O'Neill, 125 Peterborough Street #8, Boston, MA 02215 USA. This article has been reviewed internally at EPA. Received 22 November 1995; accepted 5 February 1996.

ma, according to NHLBI statistics (8). Says Foster, "Personally, I've been involved with this issue since my sister developed asthma at a very young age. Even so, it was very shocking to me to learn about the mounting toll of asthma suffering and deaths in the African-American community."

The disproportionate effects may be attributable in part to inadequate health care and education, as well as higher-than-average exposures to air pollution, particularly in urban areas with high minority populations (9).

"The hospitalization rate for asthma among African-American children is twice that of whites, but socioeconomic status is a more significant risk factor than ethnicity or race," says Floyd Malveaux, Dean of the Howard University Medical School. "I believe asthma is largely a colorblind disease, and that poor environmental conditions in urban communities, along with other factors such as inadequate access to health care, are what tip the asthma incidence statistics toward African-Americans and other minority groups. Urban homes may have relatively high indoor concentrations of dust mite and cockroach allergens, as well as nitrogen dioxide. Exposures to these pollutants have been significantly correlated with asthma symptoms in children."

Malveaux's comments reflect the range of possible determinants of asthma. Weiss et al. (10) have explored this issue in depth by examining the rising trends in asthma incidence and prevalence and comparing them with trends in known and possible risk factors for asthma. Air pollutants, along with cold air, exercise, and strong emotions, are considered potential triggers for asthma episodes in many patients, and avoiding triggers is an important part of asthma management.

"Environmental justice," or providing all people with an equal opportunity to live in a healthful environment, is an important goal for the federal government. In keeping with this goal, the EPA is helping to fund the workshops and providing materials enhancing the message of prevention through avoidance of environmental triggers.

"The open airways campaign is an excellent example of community-based efforts to improve environmental health and life quality," says Clarice Gaylord, director of the EPA's Office of Environmental Justice. "This is why we included the Open Airways campaign as a model project in EPA's 1994 Environmental Justice Strategy—a report required by President Clinton's executive order to ensure equal environmental protection for all communities" (11).

The first wave of activity focuses on schools in urban areas where at least one-

fifth of the students come from homes at or below the U.S. poverty level. Environmental justice activists have encouraged bringing environmental health education programs to places where members of the most affected communities can be reached, such as schools. And in the case of asthma, schools are an ideal site for reaching those hardest-hit by asthma: children.

"Prevention is a critical component of health promotion," says Sandra Eberle, the EPA's representative to the NHLBI's National Asthma Education and Prevention Program (NAEP) Coordinating Committee. "Preventing exposure to environmental pollutants, particularly allergens or secondhand smoke, can be an effective way for asthma patients to manage their condition. Each of us can take actions to lessen our family's exposure to air pollution, particularly indoor air pollution." EPA is providing literature on preventing pollution exposures for the open airways workshops and released a kit for preventing indoor pollution in schools in the fall of 1995. *Indoor Air Quality Tools for Schools* (12) emphasizes low-cost or no-cost ways of keeping the air in a school clean and safe and can complement school-based asthma prevention and education programs by reducing the likelihood of environmentally triggered asthma episodes in the school environment.

Other Partners in Asthma Prevention

The NHLBI is an important player in the open airways campaign. The NHLBI-chaired NAEP Coordinating Committee fosters cooperation among its members, who represent both the public and private sectors, in implementing educational programs such as the Open Airways for Schools curriculum. NHLBI has produced a number of publications and programs that focus on asthma care in the school environment and is working with groups like the ALA and the American School Nurse's Association to ensure that those materials make a difference.

The NHLBI is committed to reaching populations that are most affected by asthma. NAEP has produced mass-media campaigns targeted at African-American and Spanish-speaking populations. Through sponsorship of asthma research centers, NHLBI has helped create institutions that can serve as resources and community focus points in the battle against asthma.

As the national corporate sponsor of the Open Airways for Schools campaign, Fisons Pharmaceuticals, Inc., is another organization committed to asthma education.

"Our mission is to educate people about the respiratory conditions that our

drugs treat," says Judy Cometa, Customer Development Manager for Fisons' Respiratory Business Unit. "Through our cosponsorship of the open airways campaign, we have access to some of our key audiences—schoolchildren, teachers, and parents—and have an opportunity to improve the state of asthma care across the country."

Hope for the Future

It is still too early to tell whether this campaign in asthma education and prevention will correspond with a reduction in asthma hospitalizations and deaths. What is known is that the Open Airways for Schools curriculum does make a difference in the lives of the children who graduate from the program. In a Columbia University evaluation of the program, the confidence of open airways children in recognizing the warning signs of an asthma episode increased (13). The children participating in the Washington, DC, workshop knew how to alert their teachers that they were having difficulty breathing and knew how to tell a health care provider what medicine they needed and in what dosage. The Columbia study revealed that asthmatic children who went through the program were viewed by their classmates as "special," and the parents of those children became more involved in managing the condition. These kinds of indicators of success, as well as children's grades and school commitment to support asthmatic children, may augment the traditionally used changes in morbidity statistics in evaluating educational program outcomes. Activities of the open airways program interested nonasthmatic children as well. To respond to such interest, the NHLBI's Asthma Awareness curriculum and *Managing Asthma: A Guide for Schools*, encourage physicians, school personnel, patients, and families to get involved in a comprehensive approach to managing and controlling asthma (14).

The Open Airways for Schools curriculum is not the only self-management program available for childhood asthma; at least 19 such programs are available and have been evaluated (15). Many of these programs have produced positive results, but room for improvement in their application exists, especially with respect to the emphasis on pollution prevention. In particular, the Institute of Medicine has recommended that educational and allergen-avoidance interventions be targeted to population groups most likely to benefit, based on specific allergenic risk factors. Further, the institute has recommended the development of programs for populations with varying socioeconomic and educational

backgrounds that emphasize allergen avoidance and incorporate follow-up actions to ensure that patients are acquiring and using their new self-management skills (16).

By working through community leaders to help follow through with some of these recommendations, the open airways campaign is planting the seeds for a sustainable program of asthma management and prevention in the nation's schools. Such community-based efforts may be instrumental in reversing the disturbing trends in asthma statistics.

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